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GEOGRAPHICAL RECORD.

AFRICA.

SLEEPING SICKNESS IN UGANDA.—The Government of Uganda has adopted a scientific plan for the suppression of sleeping sickness. Throughout the country efforts will be made to exterminate the tsetse fly, which is supposed to be the cause of the disease. The natives, to the estimated number of 20,000, are to be removed from the fly-infested district on the shores of Lake Victoria to healthful locations inland. The sick are to be placed in segregation camps, where they will undergo the so-called atoxyl treatment. The landing-stages along the shore of Victoria Nyanza will be freed from the tsetse fly by means of the complete clearance of all vegetation. Fords, ferries, and water-holes will be similarly dealt with. The native chiefs appear to appreciate fully the importance of the matter, and are co-operating loyally with the Government in helping to stamp out the terrible scourge of Central Africa. E. H.

AMERICA.

WATER-RESOURCES INVESTIGATIONS.—During the fiscal year 1907-8 the water-resources branch of the Geological Survey will carry on measurements of the quantity of water in important streams at over 600 gauging stations in forty-two States. In California, Washington, Oregon, and Maine the work will be in co-operation with the States, but many stations will be maintained by the Survey for the Reclamation Service in connection with irrigation projects. Special-ground water investigations will be carried on in the Atlantic and Gulf Coastal Plains.

GEOLOGIC SURVEYS IN NEW JERSEY.—The survey of the geology of the New Jersey highlands is being continued this year by the United States Geological Survey, the work having been assigned to W. S. Bayley. Mr. Bayley expects to finish the field work on the Greenwood Lake and Ramapo quadrangles before the close of the season.

A STUDY OF AMERICAN INDIAN GAMES.—The Twenty-fourth Annual Report of the Bureau of American Ethnology (1902-03), just issued, contains, besides the administrative report, only a single paper, a monographic study of American Indian Games by Mr. Stewart Culin, of the Brooklyn Institute of Arts and Sciences. He began the collection of the data in 1903 in collaboration with the late Mr. F. H. Cushing, whose ill-health, however, prevented him from doing more than to offer advice and suggestions. Under the studies of Mr. Culin the prevalent notion that games of chance are trivial and of little significance as a subject of research gives way to an appreciation of their importance as a part of human culture. He finds that the Indians of both sexes play games of chance persistently and with utter recklessness as to the wagers laid; and yet these games are intimately connected with religious beliefs and practices and have among all tribes a devotional aspect, and in some cases are of divinatory significance. Thus his study of Indian games is not only an exposition of their technology, but also contributes to an appreciation of native modes of thought and of the motives and impulses that underlie the conduct of primitive peoples.

Over 800 small quarto pages, profusely illustrated and well indexed, are given

to this description of the numerous Indian games. The author received important assistance from many workers and several museums, the material was found to be enormous, and the letterpress is illustrated by 1,112 figures.

The volume contains a classified and illustrated list of practically all the American Indian gaming implements in American and European museums, with a more or less exhaustive summary of the entire literature of the subject. The collection is confined to games in which implements are used.

RELATIVE HUMIDITY CHARTS OF THE UNITED STATES.—In 1880 Professor Elias Loomis published the first chart of relative humidity for the United States. On this chart, which was based on observations made during January, 1875, only four humidity lines were drawn, but two important facts were clearly shown: First, the general north and south trend of the lines over the Great Plains; second, that east of the Rocky Mountains there is a belt of territory "where the mean relative humidity is less than one-half," to quote Loomis's statement. Later, charts for January, July, and for the year were published, the latest ones being those in the *Report of the Chief of the Weather Bureau for 1901-02.* We now have the first relative humidity charts for each month, drawn by Kenneth S. Johnson, of Harvard University, and published in the *Report of the South African Association for the Advancement of Science* for 1906, pp. 161-168 (Cape Town, 1907). These charts are based on data for the uniform period of 14 years (1888-1901), published in the *Report of the Chief of the Weather Bureau* for 1901-02, p. 318.

The curves are drawn for differences of 10 per cent. only, for the sake of clearness in presenting the main facts. Furthermore, the length of the records is not sufficient to warrant greater detail. Among the most striking features shown on the charts is the uniform high relative humidity along the coasts, in contrast with which is the extremely low relative humidity in the southwestern interior, especially in Arizona, Nevada, southeastern California, and the adjacent districts. While the high relative humidity on the coasts remains fairly constant throughout the year, the low in the interior basin becomes more marked as summer approaches, thereby increasing the already strong relative humidity gradient between the Pacific coast and the interior.

Another interesting fact is the annual movement of the lines in the northern part of the interior basin. These travel north in summer, reaching the northern limit in June or July, returning south, or perhaps entirely disappearing, in winter.

Among other features worthy of note is the distorting effect of the Great Lakes, where the relative humidity tends to remain at or near 80%, an effect quite similar to that produced by the oceans. Also—a thing which rarely occurs—there is a prevailing north and south trend of the lines over the Great Plains, originally pointed out by Loomis, as above noted, in the vicinity of the 100th meridian, showing that the relative humidity there does not vary with latitude. R. DEC. W.

CINDER CONE NATIONAL MONUMENT.—The President has issued a proclamation declaring that the area in the Lassen Peak National Forest, California, which embraces Cinder Cone, the Lava Field, Snag Lake, and Lake Bidwell, is reserved from private appropriation and use and set apart as a national monument. It is to be known as the Cinder Cone National Monument.

The proclamation was issued by authority of an act of Congress approved on June 8, 1906, entitled "An Act for the Preservation of American Antiquities." The act authorizes the President, in his discretion, to declare "historic landmarks, historic and prehistoric structures and other objects of historic or scientific inter-

est" on lands owned or controlled by the Government to be national monuments; and to reserve them from private use and to prevent unauthorized persons from settling upon the lands or from appropriating, injuring, or destroying any feature of the national monuments.

The area now set apart as the Cinder Cone National Monument is described in the "Lassen Peak Folio of the Geologic Atlas" (Folio 15). It is situated near the southern terminus of the Cascade Range. Cinder Cone is about ten miles northeast of Lassen Peak. The cone rises about 640 feet above the river plain in which it stands, is dull black in colour, and composed of scoriæ, lapilli, and sand. On the summit of the cone is a well-developed crater with a depth of 240 feet. The lava field which encircles the Cinder Cone on three sides covers an area of about one by two and one-third miles, ends abruptly on all sides, and is in many places over 100 feet in height. Snag Lake was formed by the damming up of the stream that flowed through the plain by the lava field. Lake Bidwell, on the other side of the lava, was once much larger than it is to-day, a part of its area having been covered by the lava field. This district has been reserved as a monument because its features, as above mentioned, "are of great scientific interest, as illustrations of volcanic activity which are of special importance in tracing the history of the volcanic phenomena of that vicinity."

Oases in the Atacama Desert.—Dr. Simon contributes to *Der Tropenpflanzer* (No. 6, 1907) a paper entitled "Oasenkultur in der chilenischen Wüste Atacama," in which he describes some of the oases in the desert where nitrates are the great product. Pica and Matilla are the most important oases. The supply of drinking water for Iquique is piped from Pica, over sixty miles. These oases are fed by underground water coming from the cordilleras on the east. Intensive agriculture is carried on in the oases, and the product, though limited in quantity, is very important to the thousands of men engaged in the nitrate industry, who would be compelled to live chiefly on preserved foods if it were not for the vegetables and fruit received from Pica and Matilla. Pica wine, a heavy sweet wine resembling madeira or port, is widely known throughout Chile. Alfalfa is a large crop, and is cut five times a year, supplying fodder to the cattle and the draft animals in the nitrate service.

A number of the oases also grow species of acacia, which make excellent fuel. This culture is important in a region whose main industry requires large quantities of fuel.

Exploring the Pilcomayo.—The Pilcomayo River, in its lower course, is the boundary between Paraguay and the Argentine Republic. It crosses the extensive plain of the Gran Chaco, which is inhabited by the Chiriguanos, Mataguayos, Tobas, and other Indian tribes. For generations the navigability of the Pilcomayo has been a vexed question, and it was while Crevaux was trying to solve the problem that he was assassinated in 1882 by the Tobas.

In 1905, according to *La Géographie,* Mr. Gunnar Lange, a Norwegian engineer, studied the navigation of the Pilcomayo from its confluence with the Paraguay to the colony Buena Ventura, near 22° S. Lat. He says that the river is not navigable all the year because of the shallowness of its lower part and barriers of vegetation above Junta Fontana. During most of the year, however, it is accessible to boats drawing not more than a meter. It would not be expensive to keep the channel free of logs and vegetation, and dams and locks would provide sufficient water through the shallows.

In the middle region, where the river is no longer navigable but is divided into small shallow streams, a canal of about 2,700 meters would connect with the Dorado, on which boats might reach the upper Pilcomayo. Mr. Lange thinks it would not be very costly to fit the Pilcomayo for navigation for at least 500 kilometers from its confluence with the Paraguay.

Mr. W. Herrmann, who was studying the middle course of the Pilcomayo, last year wrote from the lower river in September (*Zeitsch.* Berlin Geog. Soc., No. 10, 1906) that he had surveyed it between Lat. 24° and 22° S., and this stretch of the river is navigable for small boats. He had been informed that this was the case as far up the river as San Francisco in Bolivia (near Lat. 21° S.), and he expected to examine this matter on his return. He says that the maps of Thouar, Campos, and Fontana are very erroneous.

EXPLORATION OF THE RIO TIETÉ.—The Geographical and Geological Commission of São Paulo, Brazil, has issued another of the beautiful Reports describing the very detailed exploration and survey of the larger rivers of the State. The report, a large folio in form, contains a description of the Rio Tieté, illustrated with many admirable photographs and detailed maps. These reports are among the most noteworthy accounts of recent exploration in America.

EUROPE.

THE NINTH INTERNATIONAL GEOGRAPHICAL CONGRESS.—The Committee on Organization of the Ninth International Geographical Congress, which will be held in Geneva July 27-Aug. 6, 1908, has arranged ten excursions, some of which will occur before the Congress meets and the others immediately after its adjournment. The scientific direction of each has been placed in the hands of a competent leader, who will this summer study the field to be traversed by the excursion in his charge. Eight or ten days will be the extreme limit of these excursions. The programme of excursions will be given in a preliminary circular and, later, in more detail in a pamphlet to be issued in January, 1908, which will contain scientific and bibliographical information relating to the excursions and the cost to the participants.

The excursions will be given to the study of the morphological phenomena of the Alps; superficial deposits in the fore-Alps, and the limestone and crystalline High Alps; economic forestry at high altitudes; structure of the Jura, the plateau, and the Alps, following a transversal profile in the three regions; botanical excursions among the limestone Alps and the mountains around Lake Geneva; the study of glacial morphology, especially the contrasts between the regions which were covered by ancient glaciers and those which were not; for the comparative study of fluvial and glacial erosion; for the study of the structure of the northern part of the crystalline Alps; and for the study of chemical erosion.

The Committee on Organization will receive offers of papers, under the conditions previously prescribed, until Nov. 30, 1907. Copies of the circular of invitation, the preliminary programme, etc., may be obtained by addressing the Committee on Organization of the Ninth International Geographical Congress, Athénée, Geneva, Switzerland. *Le Globe* (No. 2, 1907) has a long report of the recent meeting of the Committee in which these arrangements were made.

IDENTITY OF LEUCAS ISLAND WITH ANCIENT ITHACA.—In 1904, Emperor William II of Germany provided the means for a topographic survey of the island of Leucas in the Ionian Archipelago as a contribution to the study of the question

whether Leucas is identical with the Homeric island of Ithaca, as has been recently maintained by Dörpfeld and other archæologists. It is well known that some students hold the view that Homer drew upon his imagination for his descriptions of Ithaca, the island home of Ulysses; while others have held that the ancient Ithaca was identical with the small modern island of that name.

Under the auspices of the Emperor, a party consisting of Captain Walther von Marées, Prof. Wilhelm Dörpfeld of the Archæological Institute of Athens, and Lieut. Nonne began the survey and study of Leucas in March, 1905. The result is a folio of forty pages accompanying a portfolio of six maps in colours and well produced, the whole published under the title "Karten von Leucas. Beiträge zur Frage Leukas-Ithaka." The text and maps are by Captain Marées. A number of excellent photographs of various parts of the island illustrate the conclusions which the investigators reached.

A study was made of the geology, topography, and meteorology of the island. The investigations show that within the historic period Leucas must always have been an island instead of having been attached to the mainland. Many data were collected showing striking resemblances between parts of the island and its coasts and ancient Ithaca as described in the Odyssey. Captain von Marées says that the present appearance and conditions of Leucas prove that it was the topographic background of the Odyssey, that Leucas is the Homeric Ithaca, and that the author of the poem knew the island well.

THE DEVELOPMENT OF TURIN.—The population of this city has quintupled since 1813. It numbered only 45,000 inhabitants in 1706. In 1796 the population was 93,000. The Napoleonic period was detrimental to its prosperity, and the population fell to 65,588 in 1813. Its population in 1905 was 361,317. Turin is one of the most healthful of cities. The average annual death-rate from 1901 to 1905 was only 16.67 per 1,000 inhabitants.

STATISTICS OF THE GERMAN EMPIRE.—The Statistisches Jahrbuch für das Deutsche Reich for 1907, issued by the Imperial Statistical Office, Berlin, is, as usual, a model of first-class statistical compilation and arrangement. All the information it contains is readily accessible. The twenty-four groups in which the tables are arranged include the statistics of population, agriculture, fisheries, animal industries, manufacturing, communications, internal and external commerce, money, prices, consumption of materials, public schools, prices of labour, labour organization, medicine and hygiene, sport, meteorological data, the protectorates, and an appendix summarizing international statistics, with diagrams showing the sea trade of the leading world-ports.

AUSTRALIA.

CLIMATE AND VEGETATION IN AUSTRALIA.—The general relations of climate and vegetation in Australia are clearly emphasized in a recent book by Dr. L. Diels, *Die Pflanzenwelt von West-Australien südlich des Wendekreis* (Engelmann, Leipzig, 1906), which forms Part VII of a larger memoir entitled *Die Vegetation der Erde.* In the interior is an extensive plateau; arid, with few rivers. On the east there are high mountains, descending abruptly to the ocean, while on the other coasts the descent is more gradual. In the north, the climate is tropical, with summer (monsoon) rains; in the south it is more temperate, with winter (subtropical) rains. Tropical forests are found in a few restricted areas between the eastern mountains and the sea, especially on the Bellenden Kerr Range, re-

sembling the tropical forests of Africa, South America, and the Malay Peninsula. Here the rainfall is heavy, and occurs throughout the year. In southeastern Victoria and Tasmania there is also forest growth, in the "temperate" climates of those regions, there being many trees here which are not found in the tropical rain-forest. On the uplands of Victoria and also, more extensively, in the extreme southern angle of Western Australia, a third form of forest is found, the "Sclerophyll," or evergreen forest and bush. Most of the continent is subject to droughts, and straggling trees occur in groups, along watercourses or wherever they can find moisture. Eucalypti are found under all conditions, in the lofty forests; in the widely-dispersed "Blue Gum" scrubs on the grass lands, and as lowly scrubby trees in the more arid interior country or on the exposed mountain slopes. The leaves are set edgewise, and the buds are protected by a lid, which falls off as the buds open.

The following scheme of vegetation types shows the characteristic variation, with rainfall, from the tropical rain-forest to the desert:

TYPE OF VEGETATION.	PRINCIPAL TREE.	UNDER SHRUBS.	SURFACE VEGETATION.
Tropical rain-forest.	Mixture of heavy trees.	Numerous shrubs.	No grass.
Temperate rain-forest.	Eucalyptus dominant.	A few shrubs.	Little grass, many ferns.
Sclerophyll forest.	Eucalyptus dominant.	Numerous small shrubs.	No grass.
Savanna forest.	Eucalyptus or acacia in groups.	Few or no shrubs.	Much grass.
Savanna.	A few low trees or shrubs.		Much grass.
Mulga scrub.	A few low trees or shrubs, chiefly acacia.		Little grass.
Brigalow and mallee scrub and sandheaths.	Numerous low trees or shrubs; acacia and eucalyptus abundant.		No grass.
Desert.	Scattered shrubs; acacia and casuarina.		Little grass, chiefly *Triodia*.

R. DEC. W.

OCEANIA.

DR. PÖCH'S TRAVELS IN NEW GUINEA.—Dr. Rudolf Pöch has a paper in the *Zeitschrift* of the Berlin Geographical Society (No. 3, 1907) on his journeys, chiefly for anthropological study, in German, British, and Dutch New Guinea, occupying nearly two years (1904-1906). He travelled around nearly three-fourths of the island, residing for some months at five different places. His longest stay was at Potsdamhafen and its neighbourhood on the north coast of German New Guinea, where he made a study of the Monumbo and also visited the Alepapun, who are hostile to the Monumbo and live two-days' march in the interior. Though the Germans have occupied Potsdamhafen for years, the Alepapun were unknown to them, and Dr. Pöch was in virgin territory when he reached them.

Many similar cases might be mentioned. Dr. Pöch attributes the fact that so much of New Guinea is still unknown to the great difficulties of travel and the unfriendliness of the natives. He found that the words of songs with which the Monumbo accompany their dances are not understood by them. They told him that they derived these songs from the Watam, whom he visited, and found that they, also, did not understand the songs, but the words, they said, came down to them from their fathers. He believes that these words are from a lost language, and have been handed down by tradition.

He spent some time at Merauke, the military post recently established by the

Dutch Government near the southeast corner of Dutch New Guinea. The post owes its origin to a protest from the British Government relating to the greatly-feared head hunters, who cross the border from Dutch territory to kill natives in the British domain. From this part of the Dutch coast nothing can be seen but a flat plain stretching to the horizon. The unfavourable conditions of navigation and the wild character of the natives have discouraged Malay sailors from visiting the coast, and not even the widely-distributed hen of the Malay archipelago is known there. Along the coast are villages of from 80 to 120 huts each, the distance between the villages being not more than a half hour's walk. The Kaja-Kaja, who inhabit them, are head hunters with peculiarities of their own. The use of the pot in cookery is unknown, and all food is roasted at an open fire. The men live together in huts, while the women and children occupy huts by themselves. Before one of the warriors kills an enemy he seeks, if possible, to learn his name, which the conqueror gives to his own son.

POLAR.

THE BRITISH ANTARCTIC EXPEDITION.—Lieutenant Shackleton gives in the *Scottish Geographical Magazine* (July, 1907) more precise details of the plans for his Antarctic expedition than the first announcement contained (BULL. April, 1907, p. 237). He has selected King Edward VII Land, at the eastern end of Ross's Great Ice Barrier, as the base of operations, instead of Victoria Land, at the western end of the barrier. The Newfoundland sealing steamer *Nimrod,* of 250 net tonnage, with capacity for 300 tons of coal in addition to all supplies, has been purchased. She will leave England about the end of July, and magnetic observations will be taken during the trip to New Zealand. Lieut. Shackleton will leave the vessel at Madeira, but will rejoin her at Lyttelton, N. Z., from which port she will sail south about the first week in the new year. The expedition will probably include twenty-eight members, of whom twelve will be the landing-party at King Edward VII Land, which it is hoped to reach by Feb. 1. The *Nimrod* will return to New Zealand, and will be devoted for eight or nine months to a magnetic survey between New Zealand, Australia, and the east coast of Africa.

The exploring party will place on King Edward VII Land a well-planned living hut, twelve Siberian ponies, a team of twelve picked dogs, and a specially-constructed motor car. Before winter closes in it is hoped a line of supply depots will be established at least 150 geographical miles to the south. It is expected that the winter quarters on King Edward VII Land will be in about 77° 30′ S. Lat., or 750 geographical miles from the pole. Throughout the work, scientific investigation will be coupled with exploration, and during the year in the far south the geologist, the biologist, and the magnetician will devote themselves entirely to their special researches within a radius of 100 miles or so from winter quarters.

In the spring, efforts will be made to extend the line of depôts another 100 miles to the south. A party limited to three members will attempt to reach the south pole, using six of the Siberian ponies and the motor car. Great hopes are entertained of the value of the motor car for traction purposes, but its employment is recognized as an experiment. As a final resort, dogs will be used. A second party of three will penetrate to the southeast behind the coast of King Edward VII Land, while three other men will try to follow the coast east in the direction of Alexander Land. So little is known of all this region that these

journeys can hardly fail to prove fruitful. The return of the *Nimrod* to take the explorers home has been fixed for about the end of January, 1909.

COMMANDER PEARY'S EXPEDITION.—The following statement, published in the *New York Herald* of August 12, explains itself:

NEW YORK CITY, August 10, 1907.

Owing to the failure of the contractors for the Roosevelt's new boilers to live up to their agreement, the main expedition of the Peary Arctic Club will be postponed for a year, and the Roosevelt, when the work of repairs is completed, will go north on a flying trip to deposit my proposed coal depôt at Etah, Greenland, returning the last of September.

In this connection it is proper to state that the contract for the construction and installation of the two new boilers for the Roosevelt was made upon the assurance of the contractors that the work should be completed on June 1, and this provision was embodied in the contract.

As a matter of fact, the boilers are only just completed, and the installation has yet to be done. This will require several days and put the departure of the main expedition so late in the season as to be inadvisable.

The question of funds does not and has not entered into this unfortunate situation. The contract for the work was guaranteed, and all payments have been met when due.

ROBERT E. PEARY.

NEW MAPS.

AFRICA.

CONGO FREE STATE.—Map of the Stanleyville-Ponthierville R. R. Scale, 1:584,000, or 9.3 statute miles to an inch. *Le Mouvement Géographique,* No. 9, Brussels, 1907.

A sketch map of the new railroad on the upper Congo by which the rapids between Stanleyville and Ponthierville have been circumvented. There are five stretches of rapids and two falls, and the difference in elevation between the two places is 138 feet. The length of the railroad is 80.6 miles. The position and length of the bridges and their construction, whether of wood or steel, are indicated.

MOROCCO.—Mapa de la Parte Norte de Marruecos. Por la Comisíon del cuerpo de E. M. del Ejército. Scale, 1:500,000, or 7.8 statute miles to an inch. Depósito de la Guerra, Madrid, 1905.

These two sheets show the northwestern part of Morocco from the Atlantic coast to 2° E. Long. and as far south as 34° N. Lat. They depend upon the route surveys of eleven members of the Spanish General Staff, with additional information from the itineraries of other travellers and from the maps of Flotte-Roquevaire and Mouliéras. The large scale and the strongly contrasting red, blue, gray and black colours have assured clear expression to all the information given. The map contains the best delineation yet made of the routes in northwestern Morocco, and in all respects, excepting the rather rough delineation of topographic forms by gray hachuring, it is an important addition to the cartography of Morocco. Its greatest value lies in the new material supplied by the Spanish Commission.

RHODESIA.—North Eastern Rhodesia. Scale, 1:1,000,000, or 15.8 statute miles to an inch. British South Africa Company, London, 1906.

The sheet was compiled from data in the Survey Office and from surveys made